

Heat: An Agent of Change

Activities with Insulators and Conductors

STUDENT ACTIVITY

Name _____

Heat is energy in motion. Heat moves by conduction through molecular communication. Insulators and conductors are the tools we use to control this heat motion. You will explore various materials that are either insulators or conductors, and determine how they work.

PROBLEM

What are some common features of insulator materials that help them prevent the movement of heat?

PROCEDURE

1. Examine the materials on display. Choose several your lab group thinks will make heat move easily, and several others through which your group thinks heat will not move easily. What common characteristics do they have? Which of the three methods of heat transfer do they encourage or discourage? Write your observations in your laboratory notebook.
2. Your lab group is now a Research and Development (R&D) group. Your R&D group has been assigned to develop a container to transport a pizza from the oven to the customer's house. You will do preliminary research to find materials that might be suitable for your client's new insulated pizza packaging. You will not be responsible for designing or constructing the packaging, only for determining the most useful materials.
3. In your R&D group, determine a good way to measure how well or poorly a substance conducts heat. Your teacher may have some suggestions. You do not need to use the same strategies as other R&D groups. Record your procedure in your laboratory notebook.
4. Choose five or six materials to check. Perform your experiments on small samples of each type of material. Record your results and any other observations in your laboratory notebook.
5. Be sure you have accurate records of your R&D group's results. You will be responsible for providing this information to a PDT in another activity.
6. Participation in a class discussion of findings about insulators and conductors. Be sure to take notes. They will be useful for your PDT work.



CONCLUSION

Write a short paragraph in your laboratory notebook that explains features of materials that make them good insulators. Give specific examples of types of materials that can be used to insulate against different types and directions of heat movement.